

AVIATION WEEK

A McGRAW-HILL PUBLICATION

OCT. 15, 1951

50 CENTS

Tires, Tubes, Wheels and Brakes, Fuel Tanks and Floor Panels

All made by Goodyear for the New Sikorsky H-19 Helicopter

Contributions made by Goodyear to this outstanding new ship include fuel tanks and floor panels as well as tires, tubes, wheels and brakes. This new H-19 10-place helicopter, soon to be available commercially, has already proved itself on the Korean front, where

it went into service late in March. The H-19 is only one of many outstanding commercial and military aircraft on which Goodyear has furnished major components as well as landing gear. Goodyear, Aviation Products Division, Akron 16, Ohio or Los Angeles 54, Calif.

MORE AIRCRAFT LAND ON GOODYEAR TIRES, TUBES, WHEELS
AND BRAKES THAN ON ANY OTHER KIND



SIXTH PRODUCTION LINE SIKORSKY HELICOPTER

The new H-19 is shown here in use as a flying ambulance during the action at the Munson perimeter north of Seoul, Korea (Photo: U.S. Air Force-Wide World)

...on the Nose!



The Northrop F-89 *Twin* Jet Interceptor is equipped with **ZENALOY®** parts — by **Zenith**

The U. S. Air Force's Northrop *Scorpion* all-jet, eight and
day interceptor, with an nose of 39 nose cones to the nose
cones, with an nose of 39 nose cones to the nose
cones and 364 nose, high velocity exhaust nozzles and nose
cone gives a terrific account of itself in aerial combat.

ZENITH's contribution of the nose assembly to this formidable
"Scorpion that cannot be stopped in its nose," is another example
of the effective collaboration of engineering, design
and production efficiency.

OTHER AIRCRAFT EQUIPPED BY ZENITH: Bausch + Lomb • Boeing • Convair • Glenn-Varney
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SUBJECT: *Sperry Gyrotron Oscillator, NAME: R. Brown*

DATE 11/3/59

Requirement:

Provide broad spectrum in the band which operates at low voltage (less than 3000 v).

Design #1: Sperry SRU-55 reflex klystron.

Design 2: Cavity range from 14,000 mc to 17,500 mc. (2.5 mc band).
15-30 micro coulombs. Tuning from 14,000 to 17,500.

Turned design:**Wavelength:**

0.0025-0.0035

cm

10.6-11.5

microns

1.06-1.15

microns

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AVIATION CALENDAR

Oct. 15-18—Society for Non-Destructive Testing, seventh annual meeting, with emphasis on aircraft parts inspection, Hotel Delano, Detroit.

Oct. 16-17—Fourth annual New York State conference on airport development and operations, sponsored by the N. Y. State Dept. of Commerce, N. Y. Aviation Trade Assn., Assn. of Towns of the State, Conference of Mayors, County Officers' Assn. and the N. Y. State Flying Farmers, Onondaga Hotel, Syracuse, N. Y.

Oct. 19—Meeting of the New York section of the American Rocket Society, including a film on the V-2 Program. 36 Dr. Porter of General Electric, 29 W. 39 St., N. Y. 16, N. Y.

Oct. 19-20—Meeting of the European Council for Professional Development, Hotel Stedje, Frederik, Marz. For information write Miss Eila Murphy, 13 W. 18 St., N. Y. 16, N. Y.

Oct. 22-24—National Electronics Conference & Exhibition, Edgewater Beach Hotel, Chicago, Ill.

Oct. 24-25-26—Annual convention of the National Assn. of State Aviation Officials, Arizona Inn, Tucson, Ariz.

Oct. 29-30—Air Industry & Transport Assn. of Canada, annual general meeting, Sephora Club, Montreal, Quebec.

Oct. 29-31—National transportation meeting of Society of Automotive Engineers, Hotel Knickerbocker, Chicago.

Oct. 30-Nov. 1—Mid-Atlantic Transportation Institute, conducted by The American University, Washington, D. C.

Oct. 30-Nov. 1—Society of Automotive Engineers, tools and lubricants meeting, Duke Hotel, Chicago.

Nov. 1—National Wing Club Dinner, Waldorf Astoria, New York.

Nov. 8-9—Seventh annual national conference in industrial hydraulics, sponsored by the graduate school of Illinois School of Technology and Avco Research Foundation, Sherman Hotel, Chicago.

Nov. 16—Annual business meeting of the American Rocket Society, 29 W. 39 St., N. Y. 16, N. Y.

Nov. 23-26—National convention of the American Rocket Society, Atlantic City, N. J.

Nov. 24-26—Meeting of the American Rocket Society, Atlantic City, N. J.

Dec. 4-6—Transport aircraft hydraulic assembly and system standards, sponsored by Vickers Incorporated, Hotel Statues, Detroit.

IT'S A FACT!



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Wester Groves, Mass.
George E. Hards
Midway Airport
Wichita, Kansas

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WHO'S WHERE

In the Front Office

Alvin F. Adams has been named a vice president of Pan American World Airways, assuming duties and responsibilities of Adm. John H. Towers, who is due to reach retirement age shortly. Adams formerly headed the Pan American's engineering department, previously was president of Western Air Express, now Western Air Lines.

Arnold K. Brown has been appointed president and director of Textronics Corp. of Boston, electronic subsidiary of American Machine & Foundry Co. The new post will be supplementary to his duties as executive vice president of the parent firm. Brown formerly was vice president of Brown & Root.

John A. Collings has been designated as executive vice president of Trans World Air Lines and will掌管 the new data traffic for passenger and cargo traffic operations, which he held since 1952. His other responsibilities include managing Trans World's cargo and passenger operations.

Charles N. Mansour has been named managing director of The American Manufacturing Co. of Los Angeles, also assuming office held at that time by the General Corp. of Los Angeles.

Thomas H. Clark, formerly of Federal Telecommunications Laboratories, has been designated director of Southern Research Institute's division of military research and development. His new post has been announced as manager for American division of General Motors.

E. J. Goodrich succeeds the late W. H. Walker as general manager of Eaton Manufacturing Co.'s Springfield division. E. H. Linsenmeyer is continuing general manager of the change of Los Angeles and H. H. Clark has been promoted to assistant general manager in charge of Calif Springs.

George E. Warren has been appointed general manager of General Electric's new Lathrop division as part of a move by GE from its new operating division of holding the Lathrop and the Laramie divisions which constituted the former Large Appliance and Small Appliance division. James M. Gossard is the new general manager of the Motor and Generator division. Francis E. Faussey, Jr., has been named general manager of the Transformer and Allied Products division. Francis E. Faussey, general manager of the Switchgear and Control division. Marshall F. Young has been designated general manager of the Manufacturing and Industrial Products division and William C. Wickham has been appointed general manager of the Components Products division.

INDUSTRY OBSERVER

This week's column was written by Aransas Ware, engineering writer. David A. Anderson from observation at the Society of British Aircraft Constructors' tenth annual show at Farnborough, England.

Most widely known secret in British aviation circles is existence of new jet fighters such as Hawker P.1067 and Supermarine 303—a derivative of 300, version developed from the wartime German Me 109 (or Motor-kawan) 109. Major improvement in the armament has been in increased rate of fire.

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The Avro Ashton, high-altitude flying test bed, was shown at Farnborough with a section of the cabin completely fitted with seats and armchairs for testing passenger comfort at different pressure levels.

Continued British interest in flexible disks and underslung cargo fighters for naval strength was highlighted by the exhibitor unit featuring a de Havilland Sea Vixen in one corner of the SBAC display. After two runs, the Vixen had landed on the shield and dropped to the rubber mat heavily. Derailments were reported as 3G, but landed like much more.

De Havilland Comet, Ghant-powered, is scheduled to go into service on the London-Johannesburg run for BEA, starting at Croy, Farnham and Liverpool. Later Avro-powered Comet will be able to make the same run with only stay at Dakar.

Aeroport Antibes, just recently on trial passenger service between London and Paris for British European Airways, has been transferred to carrying freight. Since Antibes is not designed in a freighter, speculation is that the shift in task is temporary until cabin heating and ventilating systems are improved. On early flights, passengers suffered in typical atmosphere of 30-40° temperature.

Rental Seversky helicopter, single-seat, 4.5 passenger pilot, has been granted temperature control clearance of climb, descent, landing and takeoff. Seversky also displays development of Bristol 175 half-tethered cockpit which uses Seversky motor hand.

The Mikoyan-Gurevich, supersonic prototype French fighter, has been flown at speeds very close to sonic. Currently powered by a Hispano-Suiza 10N, the Mysterie is slated to receive the F404 Avon 101 after increased thrust. Informed sources say that the Mysterie will reach supersonic speed with the new engine.

The Sud-Ouest Avro 4000, French trans-jet bomber of promising design, is unable to complete early stages of flight testing because of lack of funds for operations. Prospects are that the plane will be in the air again after January, which date will mark the beginning of the next French fiscal year.

Estimates of load and force strength in Europe vary from the value of 10,000 g-force by Arfka Heidmann, British Secretary of State for Air, to a French air force estimate of 15,000 to 18,000. This figure is reported as tactical aircraft only, does not include any of the bomber forces illustrated in Russia.

Washington Roundup

140-Wing USAF?

First boast in USAF's build up to 140 wings by 1954 item in up-10 bill written the Administration. Joint Chiefs of Staff have approved the expansion beyond the present target of 95 fully manned wings by late next year.

The proposal is now before the Security Council—dominated by the heads of civilian departments and agencies.

The Congress' concern centers on its cost—and the latest the area spending might play on the economy. It would shoot the current fiscal year deficit by USAF alone to the \$30-billion mark, the total defense bill up to \$70 billion—over five times the \$15 billion spent two years ago.

Rep. George Miller, chairman of the defense appropriations subcommittee, would quibble in a speech on the floor.

Defense appears agreed to give the anticipated program, it is necessary to consider whether or not industry and labor can provide the materials. . . . These are also strong fiscal considerations which must be weighed steadily before decision is reached on the magnitude of the new air power program."

Constituting the motivation to continue in putting "more" ahead of "less" are new intelligence reports of the raising of greater racing air power in the Korean theater.

Last week, though, the Administration wouldn't even use "airbase" in its air power expansion.

• Congress will set off a \$5 billion "national security fund" to "bolster the base" for a building of Naval air and USAF beyond the present goals of a 14-carrier Naval force and a 95-wing USAF, and to provide funds to air commands in the area of the world to keep them in shape. They are expected to be the first targets with the 100 wings due mid-1953. Defense Appropriations Chairman Lovett recommended the \$5 billion. He explained that it wouldn't be a commitment to begin a power build up, just lay the groundwork. The Senate voted the fund. The House was ready to go along.

• But the President said no.

• The outcome: Congress voted \$5 billion additional for plane buying anyway. \$567 million for USAF, \$335 million for Navy. A big this will go for electronics equipment—some of which now requires longer lead time for production than that which is required for aircrafts or even engines.

• The savings on time will be lost in the building up of air power if the President ends up in the year given the green light to the 140-wing program and the some \$6 or \$7 billion additional funds USAF will need to implement it. The services wouldn't have obligated the \$5 billion before January even if that amount had been voted then.

USAF: The Major Defense Arm

Moreover, the Air Force, only four years an independent service, is now the major arm of defense. The current 1952 fiscal year military budget as approved by Congress divides the funds: USAF, \$18.6 billion; Army \$9.9 billion; Navy, \$15.8 billion.

It will take about two years to translate the funds into strength in being.

Vandenberg vs. Fechteler

USAF's Chief of Staff, Gen. Hoyt Vandenberg, and new Chief of Naval Operations, Adm. William Flockhart, have different ideas on the role of the fast carrier in a coming war.

Vandenberg expects the dogfight to hold the key to victory. Vandenberg favors total aviation, equipped with "bomby" A-boats, holding out the promise of victory for relatively cost-expensive allied ground troops.

• Fechteler's viewpoint: "Neither the great improvements of the past nor those of the foreseeable future will alter the basic military truth that it is next to impossible to win a war. The carrier who can do the most damage will win. The carrier who can do the least damage will lose. The carrier who can do the most damage will not win it today. The support he needs will be provided with decent supplies as they are today."

• Vandenberg's methods: "We stand on the threshold of awesome and terrible developments. If it was a trauma before to see that air power armed with conventional weapons held the key to the ground battle, it can now be predicted with reasonable confidence that air power plus will be armed with atomic weapons, too, through the precision bombing of strategic points, prevent the issuing of the huge aggregations that brought on the bloody slaughter of the past."

Boyle Aviation Accounts

The low business sold by Democratic National Committee Chairman, William Boyle, to his partner, Max Seidell for \$150,000, when Boyle charged his client from unpaid to profit executive vice chairman of Democratic National Committee early in 1949 included (according to Seidell's report):

• United Air Lines. Valuation, estimated by Boyle and Seidell \$30,000. The amount involved corresponds with WAA Administration over leasing arrangements for part of the former Tiddian plant in the New York area. A settlement was made out with John Egan, then head of the WAA legal staff, now Defense Materials Administrator, but only \$15,000 in fees collected.

• Trans-Continental Airlines. Valuation: \$10,000. The account involved a dispute with WAA over surplus planes. The amount settled in the company's arbitration and \$1,000 fee collected.

Things to Watch For

• No more regular flight pay for crews assigned to desk jobs—just retention pay for intermittent flying will come to襄tion gradually.

The Air Force has provided no pay to personnel "whose assigned duties do not involve operational or training flights." So congressional sources point on the official explanation of the law's intent: "to make certain that officers and sergeants shall not be permitted to draw flight pay except for flights on specific orders for operational or training flights, including such flights as are necessary to maintain the proficiency of administrative personnel." They estimate a saving of \$100 million annually.

—Katherine Johnson

AVIATION WEEK

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Unrealistic Aircraft Schedules Face Cuts

- Planners take new look at engine production and find they have more planes coming than engines.
- And, anyway, if present schedules are met, civilian production would really feel the pinch.
- So military schedules will be keyed to the engine output, but civil aircraft will take big slash.

By Alexander McSavvy

New release schedules for U. S. military aircraft production, based on a supposed list of how many powerplants can actually be supplied for the aircraft, are due for announcement in less than two weeks.

Washington aviation circles were buzzing last week with reports of the extent of the expected cutbacks in schedules, and what planes and powerplants they would affect.

Aviation Week learned that the revised engine schedules had already been determined for the first quarter, 1952, and that around aircraft schedules, based on the engine available, would be announced to aircraft manufacturers as to the types of engines which power the various aircraft.

It looks as if references presented by industry at the recent American Society of Lubrication Engineers meeting in October will add the General Electric J-35 and Pratt & Whitney J-44 to the list of powerplants now coming out in fairly good numbers, still and afterburner. As a matter of fact, USAF used to anticipate schedules for such planes as the North American F-86, Lockheed F-94, Northrop F-89, Boeing B-47s and Convair B-36s, all of which use some of these engines, as rapidly as is possible.

• Curtiss-Wright's jet engine program as

Washington Aviation Gas Turbine division is reportedly behind schedule, due at least partially to the effect of the Korean Civil Grids on its jet engine plant there. The new Westinghouse J-49 is also reported behind schedule, to the extent that other makes of engines have been flown in some of the new Navy fighters which were scheduled to be powered by this engine.

• As previously reported in Aviation Week, the new fighter jet fighter in the USAF's Project 4000, Advanced Composite, with gold-bonded aircraft skin, is to be built by a 125 USAF staff aircraft.

But Aircraft Production Board Chairman Harold (Biff) Bayes said he wants transport protection continued.

• So the top policy result as importance

will as these jets are reported falling behind in production due to the strike. So engines using the Wright R-3350 and smaller Wright piston engines may be preferred alternative institutions.

• At least one of the major manufacturers (Allison) has made an attempt to cut back some of its materials requirements at Defense Production Administration. The attempted cut was stopped by appeal, but it again raised the question of how far the new "open season" on military aircraft requirements can be carried in an effort to take care of civilian industry materials requirements.

• Mr. Not-Be-So-Bad-Is-Labeled means may say that the overall cutbacks of aircraft schedules will not be nearly as drastic as industry fears. But the fact remains that schedules originally called for are going to be cut, and some of them sharply.

Whether the decision to drop existing schedules had any connection with the resignation of John A. McCloskey as USAF Undersecretary, at a question being raised around Washington. McCloskey had assumed considerable personal responsibility for the schedules which are now being chopped, and felt that the industry would be able to catch up and meet them in the new year. It is also believed that he looked with very favor on the present methods of the program which he had followed.

The cutbacks have been listed at repeatedly in recent speeches of Manly Blachman, EPA Administrator, and Defense Minister Chester E. Wilson, who have made clear their desire to "not make things worse on production schedules" and to have the civilian production cut only as far as is, and still kept alive.

DPA Moves Against Civil Aircraft Makers

Defense Production Administration has so oftened cuts of 11 to 15% in materials for civil aircraft production and military aircraft components, usually reported in AVIATION WEEK Oct. 6 to 10.

• Civil transports and other aircraft are reportedly enough to escape heavy cuts in the short-term unless passed along DPA staff believe.

• Civil aircraft shipments requested by NPA Aircraft Division are reportedly higher than other estimates of their requirements indicated by the Civil Aeronautics Administration's Aviation

Defense Requirements Officer. DPA's 500 CAA hours are as much lower than NDA's, since DPA will take all even-lease figure and see how it all works out.

DPA is out to stop "oversupply building" by aircraft component manufacturers. So it studies the competitive market categories of components, too, as well as the civil aviation requirements. Since 95% of the aircraft components designated "B products" under NPA are used for military planes,

• Military needs overrule all for scarce materials, DPA says. So the cuts previously proposed will be mostly taken out of civil aircraft requirements. That is the DPA plan. Some of the cuts, however, will be passed on to military components. This is "so as not to stop all civil aircraft production." Military transports are on the same assembly line as civil, and will be affected also by DPA's actions.

Gilpatrick Succeeds McCone in AF Post

Resignation of John A. McCone as Undersecretary of Air Force and succession of Russell L. Gilpatrick to succeed him have been announced by President Truman.

McCone is returning to Los Angeles to resume private business. An 18-year-old Gilpatrick, former New York attorney, has been serving as Assistant Secretary of Air Force since last April, with the assignment of formulating and supervising procurement policies of the USAF.

► **"Magna Carta."**—McCone's departure builds up the issues which fed west into opposition on the President's Air Policy Commission in 1947 and 1948. Thomas Knight Fortune, chairman of the commission and McCone, as one of its members, were generally credited with the major role in preparing the commission's report which generally regarded as a kind of Magna Carta for procurement.

When Fortune was named Air Force Secretary in April, 1948, he promptly sought McCone at his residence.

► **First Use.**—McCone took over the task of supervising the rebuilding of the U. S. aircraft industry for military plane production to support the USAF as the nation's first line of defense. Up to the fact that McCone has been preparing to resign, job was the government's responsibility for procurement has been going to Gilpatrick in recent months.

Gilpatrick was born in Brooklyn and was graduated from Yale University Law School in 1931. Admitted to the bar in 1931, he became a member of the law firm of Growth, Seaman and Wood. . . .

► **Contract Agents-During World War II.**—Gilpatrick was chosen for cooperation in war production and was instrumental chiefly with the legal aspects of matters dealing with the financing of strategic plant facilities, and management and contract termination procedures.

McCone is returning to Los Angeles as chairman of the board of both the Ashton Handley Corp. and the Pacific Fibre Corp. In 1937, McCone, For

a former member of Consolidated Steel, formed the Berchell-McCone-Brown Co., Los Angeles, to engage in design, engineering and construction of process plants, refineries and power plants. One of the major projects undertaken by that firm was construction of the manufacturing plant at Birmingham, Ala., for modification of B-26s and B-52s in World War II. It was one of the largest Air Force modification centers at that time.

Probers Eye AMC Procurement

Gen. Rawlings demands internal soul-searching as gratuity charges result in several resignations.

Dayton, Ohio.—An Material Command announcement that several key personnel had resigned as a sign of dissatisfaction with procurement procedures has prompted a demand by further investigation and dismissal of others who might have violated regulations.

An Air Force spokesman said contracts involved amounted to millions of dollars, but they were not succeeded in finding the scope of the scope of the alleged irregularities.

Extent of demands resulting from alleged violations of procurement regulations will depend completely on the range of potential investigation.

If the probe drives down to the "upper hemisphere-control" level—and such "gratuities" are banned by AMC regulations—the buying staff will be skeletonized almost overnight.

However, the probing probably would not begin until such action is taken in two recent controversies by AMC. The discount monthly rate on the buyer's position will be held to a minimum.

That is the general consensus here in fact.

► **A House-organized investigation** headed by Sen. Elton Kefauver after the Senate adjourned. . . .

► An internal soul-searching by AMC demanded by Lt. Gen. E. W. Rawlings, army-appointed commanding general.

Evidence in the cases that for sus-

pected has been turned over to the Department of Justice for possible prosecution.

► **Merde.**—Merde, school to adults who are individuals involved in discussions on creating a morale problem within the Procurement division, showed up the other day carrying approximately \$16 billion worth of contracts during the current fiscal year.

The current wave of dissensus—and "merde"—irregularities—comes from a supplier which provides buyers may not accept guarantees from contractors, present or potential. "Guarantees" are

Naming Names

An Material Command has released the identities of those personnel involved in alleged procurement irregularities.

► **R. G. (George) Hallfield,** former employee in the Aero Medical Laboratory at Wright Air Development Center.

► **Luther Katz,** former electronics buyer in the procurement division, Air Material Command.

► **Frederick L. Bridges,** manufacturer's representative of Washington, D. C. Bridges is being sued for \$352,92 by Bellanca Aircraft of Dayton for nonpayment for a damage he inflicted for "high procurement officials." Brig. Gen. Phillip W. Smith, chief of the procurement division, was supposed to attend, but was out of town at the time of the dinner.

AMC also has announced here that a House-organized investigation will be held to determine whether the Air Force has been guilty of violations of procurement regulations. "Merde" went Bellanca, representing the Gould Products Co. of Newport, Ky., and Don Bridges, representing the Manufacturing Laboratory Service, Inc., Dayton.

defined as driven from contractors or their representatives and stage from start and end gifts down through luncheons, entertainment and hotel accommodations.

While at least one of the seven cases brought to AMC currently involves an employee of the Wright Air Development Center, it has been turned over to AMC for investigation because it pertains to procurement which is under

► **AF View.**—In a prepared statement,

which he read, Gen. Rawlings de-claimed:

"We in the Air Force have a sacred obligation to build up the defenses of the United States as quickly and easily as possible. Any man or woman who violates the standards of the Air Force, and thus hinders our procurement program, will be separated from his or her Air Force connection immediately."

"The Air Force has rigid rules against military personnel, or civilians employed by the military, accepting gifts, gratuities or performing those duties in any irregular manner."

"However, an any operation involving thousands of people and billions of dollars, a few men will try to make money by any means. I have informed everyone in my command to be on a sharp lookout for such individuals. Our system of detecting and preventing wrongdoing is good and we are constantly seeking to improve it. But we realize how perfect our checks may be, some offenders may go undetected for a short time."

"We have suspended several civilian employees lately for irregularities. Some other have been dropped when they knew they were under investigation. Their numbers are infinitesimal when compared to the thousands of people we can estimate who are doing an honest, hard and effective job for their country. Thank God, we have so many of these latter."

Among the cases cited in the statement which was read by the general are:

► **Dismissal.**—One civilian who violated regulations in dealing with a contractor.

► **Suspension.**—One civilian for six months and transfer to another job only for procurement for the same reason stated.

► **Resignation.**—A buyer of travel equipment who admitted receiving gratuity, a buyer of electronic equipment who admitted making specifications changes to Bell Molding to a favored firm being a supervisor who admitted accepting gifts and assigned the next day to accept employment with an old job contractor.

Others include one instance in which a contractor had a contract canceled because of erroneous statements by his representative.

All manufacturers' representatives are compelled to sign a statement that they will not offer gifts to Air Force personnel.

Failure to so sign could lead to loss of the representative in question from the service.

Violation of either terms makes possible cancellation of the contract with the buyer involved, certain other penalties and barring the representative from the base.

New Aviation Engine Plant for Chevrolet

Chevrolet division of General Motors moved still farther into the aircraft engine production program last week with announcement of plans to build a new aviation engine plant with 1 million sq ft capacity at Flint, Mich., for production of parts and subassemblies of Wright R-3350 engines.

This will be assembled at the Chevrolet Technical, N. Y., plant site, where approximately 3 million sq ft of additional plant space is being acquired to the project. Seven other Chevrolet plants already have received production programs for components of the engine and additional augmentments are planned.

Construction of the first plant and a radius of 10 miles ap. In addition to the Technical plant site site for completion is about a year.

Chevrolet will build both the Wright

R-3350-26W piston engine used at 2,710 hp, and the R-3350-30W supercharged turbo-piston engine, rated at 3,160 hp, under contracts for the Air Force and the Navy.

Stepping out of the Chevrolet plant capacity for the R-3350 production indicates a still larger emphasis on the big engine, which powers such aircraft as the Fessenden C-128, Lockheed PV-2 and the Douglas AD-1. The Chevrolet R-3350 production will be in addition to that already underway at the Wright Aircraft Corp., original developer of the engine, at Waukegan, Ill.

USAF Appointment

Brig. Gen. Ralph P. Sturtevant, Jr., has been appointed commanding officer of USAF's Institute of Technology at Wright-Patterson AFB, replacing Brig. Gen. Leopold L. Dorn, who will become chief of research, Air Research and Development Command, at Wright-Patterson, Md.



BUCKAROO WITH A KICK.

Tomcat's new T-33 Buckaroo trainer, weighing only 1,075 lb fully loaded, carries ten 20-mm. rockets, two 30-mm. machine guns with 100 rounds of ammunition each, one



RUSSIAN-BUILT IL-12 close support and reconnaissance aircraft captured in Korea is shown stripped down outside the ATIC building at Wright-Patterson AFB where it will undergo close study by experts.



WING SECTION of a YAK-13 shot down over Korea is inspected. Although only a fraction of gun mounts were provided in plan,



UNIFORMS of North Korean or Chinese Communists who are being given their uniforms. Tag on GI implied.



ARMAMENT recovered from Russian IL-12 by ATIC included this 7.62 Skoda on top rack and the 37 mm Vys, below. One of each model is mounted in either wing of the two-seater support aircraft.

AF Studies Captured Russian Equipment

Defense GI—Most effective for power in the dominating factor in United Nations airpower is air battles against Russian-built fighters over Korea.

That's a logical conclusion when analysis of equipment captured in Korea and flown to Wright-Patterson AFB for detailed study by experts operating under division of Air Technical Intelligence Center.

Niney cases of ATIC operations is Building 10 at the Air Force base and it is here that military aircraft maintenance specialists delve into performance of captured equipment to make their evaluations which, in turn, are

matched against capabilities of our own equipment.

Completely unarmed visitors won't find captured equipment much of a thrill. Rather, they find interest with inlets and outlets of energy sources which are being subjected to exhaustive testing in simulated strong and weak points.

The IL-12, for instance. It is a Russian two-seated close support and reconnaissance plane salvaged in Korea and the source of much dispassionate analysis on the trends taken by Russian aircraft designers. It carries two Vys 33 mm guns, one in each wing and a smaller Skoda 7.62 mm gun in each wing. The former is a bit heavier

than our .50 caliber machine gun—but twice over the rate of fire power.

The latter is in the two outer also has a 12.7 mm machine gun mounted on the rear fuselage.

A MiG-15, the YAK-13, are among the bandaged fliers of captured enemy equipment sent to ATIC from Korea. Major assemblies are taken apart to see what makes them tick by specialists under the direction of Col. Harold E. Watson, the chief.

Col. Watson and his staff are alert on new findings. For the results of these tests are passed along to industry and, when applicable, to our technical forces.



"Up, Please"

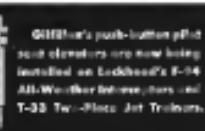
TOP-OF-JET PUSH button merely flicks a switch to move up or down in the cockpit. Hand-cracking steerable nose seconds... had to be washed out of jet aircraft.

OPPONENTS now man produce fast a push-button elevator to raise and lower the pilot seat for Lockheed's F-94 All-Weather Interceptor and T-33 Two-Place Jet.

IMPRESSIVE! Vital state landing and takeoff, accurate guiding, easy reach of controls and instruments depend on pilot position. Jet speeds and complex rockets demand quick, easy seat adjustment. Gilfillan developed and designed a pilot seat closer to "impossible" specifications to record time: *W-100*, T-33. *Production*: Fift 350 lbs. 5 inches in 5 seconds, apart at T-33 below zero.

NEW, Gilfillan is mass-producing pilot seats for jet fighters. *New thinking* for new problems is 80% of Gilfillan. For forty years Gilfillan has been following through from "impossible" developments to mass production.

This type of thinking backed by proven results makes Gilfillan, producer of GCA Radar Landing Systems, a production leader in precision electronics and aircraft equipment.



GILFILLAN'S push-button pilot seat elevators are now being installed on Lockheed's F-94 All-Weather Interceptor and T-33 Two-Place Jet Trainers.

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A Good Sign to Fly to...

The ancient city of Lisbon has been a principal port for centuries, located where the Tagus River meets the Atlantic. But many of today's travelers and traders make use of the excellent facilities of Portela de Sacavem Airport, now in process of being greatly enlarged.

Aircraft owners and operators rely on Esso Aviation Products here, close to Lisbon's outskirts, as elsewhere along the seaways of the world. These products have been developed by research which goes steadily ahead, working out newer and better means of meeting the needs of modern aviation.

The Esso winged oval symbolizes petroleum products of uniform, controlled quality built by more than 42 years of aviation experience.

At Portela de Sacavem Airport, as at
Paris-Meudon Airport, Avions de ligne
use Esso Aviation Products in their Standard Formula for



ESSO EXPORT CORPORATION, AVIATION DEPARTMENT,
45 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

PRODUCTION ENGINEERING

"The Well Tempered Aircraft"

Under that title, Arthur E. Raymond, vice-president-engineering, Douglas Aircraft Co., delivered the 39th Wilbur Wright Memorial Lecture before the Royal Aeronautical Society in London Sept. 19.

Speaker of Raymond's leadership among engineers (which has brought him, among other honors, membership in the National Academy of Engineering for Aviation), this lecture must reflect the self-assessments going on in the engineering fraternity in this time of total change in aviation. It is also the most thorough approach to the problem of contracting today's aircraft made by a recognized authority in aircraft design. Avia News World is publishing in this and subsequent numbers the major portion of the lecture.



Arthur E. Raymond

Eight 'Musts' for Production

• **It's not very difficult to build an airplane—even a radical airplane—and make it fly. But it's not a successful airplane unless there's a need for it.**

• **And after the need is determined and met, there is still another factor: the well-tempered aircraft has both quality and suitability of design.**

The task today in the field of aircraft design is to produce a large number of good aircraft with the least expenditure of cost and time. The resources of Great Britain and the United States are limited and must be used as effectively as possible. By good aircraft are meant aircraft that contribute most to society, that they cost. Such aircraft normally have the following qualities:

—Those which might be called "design excellence," meaning that one only need focus upon blending of avionics, impartial technical analysis with path correct and concise uses, the mass reduced approach used by the Wright brothers 45 years ago.

In attacking this subject, certain fundamental elements are listed. These may not be all-inclusive, but they appear to be essential to the production of aeronautically useful aircraft.

• **A Proper Environment—the work should be carried on in an atmosphere conducive to efficiency.**

- Good initial choice, based on sound specifications
- Excellence of detail design
- Thorough development—the "de-bugging" process
- Follow through— indoctrination and training of operating personnel
- Persistence and tenacity in the face of difficulties
- The aircraft must be made known to those who have a need for it and all the ways in which it may be used must be explored
- Careful, successive, properly timed introduction of a new model
- Adaptive cause—shelter to cope with the unexpected

—Those fundamental elements are now considered in turn.

1. Proper Environment

• **Confidence**—The flying above all the rest makes a project go in the enthusiasm of its backers, not like an insurance plan on for effect—sooner or later this is

seen through—but rather the enthusiasm that comes from the conviction that the project is sound, worthwhile, and fit to succeed.

That is a point where action must be made open to the Wright brothers Confidence and the courage that results from it are fundamental and essential.

• **Adequate Financing**—Confidence must be communicated to others, and among the first who must be convinced are those who put money into the project. Whether that funding is from the government, a private, or a combination of both, it must be adequate to carry through the inevitable time of development.

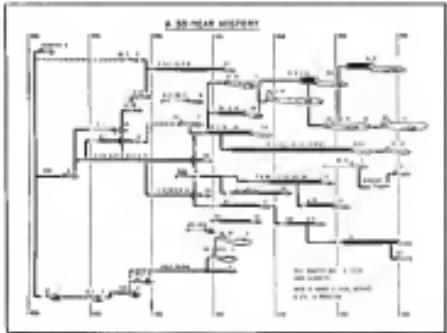
It is often easier to build a prototype than it is to put it into production. There are many reasons for this, but one of the most important is that the aircraft can never be proved a success until its development period is behind it, as until several machines have been in operation for some time. On the other hand, until its merits have been reasonably established, it is difficult to get people to buy it. There is an interdependence between sales and manufacturing that makes it difficult to have one without the other. As G. B. Edwards has aptly said, "A winning customer is often complicated by a press of inactivity—it helps him to make up his mind."

It is happen, also, that the greatest need for funds tends to come in the time when troubles are most likely, that is, during the early production period.

• **Facilities**—Many a successful aircraft was built under great physical handicaps and it certainly cannot be denied that good working conditions are an incentive. The human spirit often finds a way over obstacles but that fact is not necessarily a good excuse for having them.

On the whole, more efficient work will certainly be done if factory and dressing office layout is right, if there is adequate space per man, and if the lighting, temperature control, ventilation, and freedom from noise or disturbance, meet certain standards. The design engineer should be close to the lab, the test laboratory, the workshop, and the experimental manufacturing area.

• **Dependability**—The supply of properly trained and experienced personnel is not enough to meet the demand; the work of every man must be made to count to maximum degree. Given a certain selection of suitable individuals, two factors of importance which affect out-



put in the attitude and spirit of the workers and the formal relationship between them, the modified organization chart. Again, spent costs can reach that it often presents very poor organization form, but why force it to do just that.

In the design organization and the same thing holds true elsewhere—two types of coordination must be provided for, coordination by specialty and by project. Headed segments have been held to it whether a specialty or group system is used or whether it's a project system, but it seems to make little difference which is used, they will both work. The important thing is that one or the other form of coordination be given preference, whether it's control of administration authority and that it be clearly understood by everyone where this preference lies. No one can argue two factors.

On the other hand, he can do as if they see his masters for two sufficiently opposite or different things. For example, a form of organization has been tried with success in which some supervisory are given two assistants, each with full authority. The chief engineer may have an administrative assistant and a design assistant, each supreme over the driving office in his particular field. On a specialty basis have a research, test, and a production committee.

Concurrent with the great reduction of aircraft design has come a narrowing of the horizons of some of the designers. It is usually impossible to maintain the same conditions as used to apply 20 or more years ago, when a man was thoroughly versed in one field and competent in many others, and when the designer often did his own stress analysis and weight estimates and followed his design intently

them subject to abuse, but both very likely if used properly. The first of these is what might be called *conscious collaboration*, the past focusing upon design problems, as they occur, of the viewpoints of manufacturers and operators, and of subgroups within the sphere of each. The second, or *latent* after the fact, is the aspiration and acceptance process. The first tends to prevent mistakes and the second to correct such as inevitably occur.

These are what seem to be chief among the environmental factors. In general, they do much to determine the stimulus in which a project is carried out and its chances of success. Through them all men can contribute their part dedicated to a common task, which cannot possibly come about unless those engaged in the task be in it, love it, and have, as already said, a justified confidence in it.

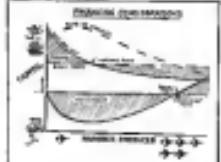
2. Good Initial Choice

A few years ago there was a moving picture which used to be introduced at otherwise dull technical sessions in the U. S. to liven the proceedings. It was called "Death of a Salesman" and was a compilation of several instances of an offhand appearance first held gathered in the film over a number of years. There were square wings, circular wings, wings like a doughton with a hole in the center, multi-bladed wings, bent wings, and so on.

Looking at that picture was encouraging, for it was visual proof of the old adage that even a kitchen stove could be sold if it fit in enough places. But the picture also showed a manufacturer patterned and none of them had any future but to assume. There was a tendency to ask, "Why in the world did that fellow ever start to build that in the first place? What made him think it was a good idea?"

Does It Fit the Need?—These are all true cases, but all those who have any considerable experience in aircraft design can look back over the years and find examples for which they were as responsible which more the name qualities. The only answer is that it did seem a good idea to someone at the time. Someone in government or firms within the military or civil operations at an industry because convinced that there was a need for such a machine. He marshalled a few arguments, convinced someone else, and the ball was rolling.

As gathered, sometimes, arguments, first were highlighted, then some were stepped up, personal pride became involved, personal honor was concerned, and sales motives of pros and cons became responsible. The project went ahead, the aircraft was designed, built, and flown—usually when



successfully—and then what happened? Nothing, because nobody really wanted it, or because the market wanted something else more. Obviously a project will be doomed from the start if it does not fill a real need.

► **Financial.**—Here are two rules to this question of deciding what to build, one is when it's needed, the other is what is possible—what should be built vs. what can be built. These have to be considered separately and in relation to each other if the choice is to be a good one. The establishment of a sound attitude in all military organizations. For example, in a high and demanding the position of acquisition, analytical skills, and judgment of projects with widely varying backgrounds.

The kind of flight needed for years from now depends not only upon the standards, policies, rules and management that will be sensible by that time, but also upon the characteristics of enemy bombers and fighters then, and the tactics they will employ. It depends, moreover, on the amount of money which can be spent on fighters in relation to what is spent on other things. It depends on how good other methods of defense, such as missile, will be then.

In other words, it depends not only upon the fighter itself but upon the whole defense system of which the fighter is part. The same can be said of any other aircraft.

► **Systems Analysis.**—Concurrently, in recent years there has grown up a technique of initial choice which has come to be termed "Systems Analysis"—to study analytically and as a whole the military task to be performed, investigate the overall task first, and establish the major characteristics of the aircraft that will best fit the job. At least, that is the aim of Systems Analysis. It usually falls short because of the impossibility of setting up the task with accuracy and honesty. Therefore, initial assumptions must be made on a weak foundation.

The great danger of Systems Analysis

is that it may be taken as a complete substitute for the exercise of creative judgment. No matter how accurately or extremely a mathematical analysis is done, its conclusion can be no better



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Fastener Problem of the Month

OCTOBER, 1961

PROBLEM: Applications like the illustrated fastener set fasteners which specify the use of standard locking devices such as lock pins or safety pins. Present production engineers with the problem of true economy, expensive assembly operations. Furthermore, a safety wire unit is difficult to replace in the field, while cotter pins frequently break in service with resulting loss of lockability, as well as damage to other moving parts of the engine from the cotter fragments.



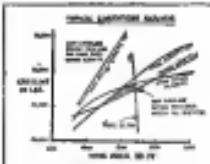
SOLUTION: Self-locking Rollpins offer a simple and economical replacement for safety wire and cotter pins. Rollpins are inserted quickly and conveniently with a hammer or a hand tool. They fit flush with the face of the nut, having no exposed ends to break off or snap bonds. Slotted hubular steel construction of Rollpins provides up to 35 times longer life than equivalent diameter cotter pins — plus a vibration proof fit against the walls of standard drilled holes. Not only is installation faster but the Rollpins can be readily removed with a pin punch — can be used over and over again.



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that an angular assumption were the great value of Systems Analysis lies in the fact that it reduces some of the elements of the problem to precise terms and thereby makes the job more manageable by the processes of expert opinion. As base goes on, experience with the technique will improve and extend it, as the Operational Analysts during the Second World War.

► Limitations Analysis—That part of the problem of social choice which lies to do with determining what is technically feasible, is often called "Limitations Analysis." One of its parts is a graph on which is plotted, against gross weight and wing area, for a given form of various constant performance characteristics. These results is shaded area which defines the combinations of gross weight and wing area, for a given aircraft configuration, that have performances better than certain specified values.

These graphs may be prepared for several configurations and the way used in choosing between them. Some theorists have found that the proposed maximum performances have been set too high, in which case there is no shaded area at all. Assuming there is one, discrete values of wing area and gross weight are simply chosen with an eye to the possibilities they present for future growth of the design.

Limitations Analysis is really a partial definition of what is commonly called "the state of the art," the level reached by the constantly rising progress curve. An smooth designed in such a way as not to take reasonable advantage of the state of the art is handicapped competitively, one designed too far in advance of it, with too much ingenuous enterprise, cuts into the design advantage in all pioneering efforts.

Another diagram prepared in a series of planning steps, combined with a large number of relatively unpublicized evolutionary improvements. Certainly, the Wright Brothers proved that. So did many others to whom a good deal is owed. At the same time it must be admitted that the process has not always been successful in producing legitimate qualities of operatively useful aircraft. He often has to compromise so

How TIMKEN® bearings help Hiller flying ambulances save lives

In this H-23A, U. S. Army version of the Hiller helicopter used for evacuating battle casualties, power is delivered to rotary wings through precision-built Timken® equipped drive shafts. The unit featured below, made by Western Gear Works, Lynwood plant, California, uses Timken tapered roller bearings to assure dependability and long life.

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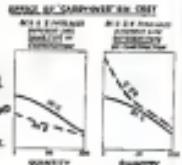
Ryan activities bracket many fields ranging from development of substitutes for electronic equipment to manufacture of huge external fuel tanks and nosecone sections... from executive-jet sections to high-speed pilothouse jet aircraft and new epoxies to jet propulsion.

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Based on the problem of doing the job at all that he is not able to do it as well as he himself might do it himself at tempt—or in someone else who has been watching his struggle, but before the power has had time to recover his physical and financial strength.

► **Carry-Over:** This does not necessarily mean that design should not be in advance of the state of the art but it does indicate the importance of keeping one's eyes open to the seeming dangers. It suggests that one should have a conservative approach to adopted, as new types of advantages become immediately apparent. Experience with past designs can be carried over into the new one with little as an change. The amount of having a change which will require little development often makes it possible to start production before the prototype has been tested, thus shortening the elapsed time before the aircraft comes into the market.

With civil transport needs, near-continuously makes passenger acceptance more and more difficult. Operators are willing to take while the aircraft is in the blueprint stage—and the manufacturer willing to accept such orders.

All of these things make it appear more attractive to do what has been done before but in a slightly different way, rather than to have one's last-minute designs. On the other hand, each an attitude carried in extremes stills progress, and, once there are enough adversities spent in this business and always will be, it leads to being overrun. On the whole, "carry over" has such a great effect on aircraft cost that it must be retained in a nucleus around which a few preceding decisions revolve.

► **Designs Paid—Double:** The new set of aircraft produced cuts them and cost by about 20%. System stability is made the market and makes a given budget go further, there is a continual temptation to combine two or more requirements into one all-purpose design. If this is done, it must be thoroughly studied that can be done with knowledge. If they are not too apart, the result is a product which really satisfies no one. Fortunately, it is time of civil transport that makes the market is so fragile, the user cost will be too high

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to be borne, too great a degree of speculation cannot be suggested.

The designer has to ask himself several rather searching questions before attacking a final decision to go ahead with a project. Not only does he have to assume himself that there will be no problems, but he has to assume "if" there are alternate aircraft already in existence that might be more cheaply and easily modified to meet his requirements and will any design be sufficiently superior to justify itself? What is my competitor doing? Is he so entrenched that it will be extremely difficult, if not impossible, to make headway against him? On the other hand, has he been established in the field so long that he is, perhaps, growing complacent? Should he have brought out a new model some time ago and failed to do so, thus giving me an opening?

The designer also has to make a final assessment of the possibility, by the time he needs them, of adequately developed engines, parts, etc., and other experience, before he can make his plans, but only for designs that were designed as such from the start. Designing and building an aircraft in these days of speculation is much like cooking a party dinner—everlasting meat is ready to come off the stove at the same time.

► Eye Abroad—A round chain of made more difficult cause of the element of forecasting in prosperity that enters into it. It is important to look forward to the day, perhaps four or five years ahead, when the proposed aircraft can actually be in service in large numbers and to try to fathom what kind of aircraft will actually be needed at that time.

It is possible to cite many instances where sufficient attention to the element of prosperity (perhaps merely an unanticipated adherence to economic thinking) has resulted in an abusive product. It is equally possible to cite cases where a particularly clever reading of the future, due to unusual awareness of what is going on at the grass roots, has produced an aircraft which seemed to have little initial backing but which ultimately had a long and illustrious history.

The aircraft designer, civil or military, works to a set of rules established by the certifying or licensing agency, which might be called "general design specification." As the years go by, these detailed requirements of a general nature become more voluminous and can be the cause of inferior designs. There can be progress and economy costs. If the designer fails to work hand-in-hand with the people who then broaden the interpretation of these general requirements, he is failing to give attention to one of the es-



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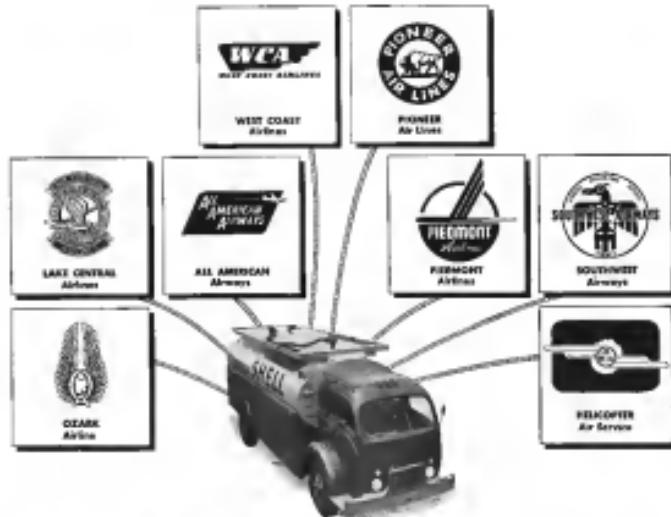
Today, every American jet engine in the air is equipped with Pesco fuel pumps. A few representative models are shown above. They range from the first single, single element pump that produced 275 gpm at 100 psi, to today's double element, boost and emergency pump in a single housing) pump that delivers nearly 2000 gpm at 6000 psi.

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essentially important elements of good design.

► **Stability** Prints—Specified upon the general specifications are the type specifications, which cover items special to a particular kind of aircraft, and model specifications, which define a particular aircraft of that type. The industry continues in some quarters, and it is a good one if not carried to extremes, to frown upon manufacturers that claim the problem rather than specify exactly how it is to be solved—that is, towards greater specification. This has done some good in helping to expand the range of design which has come from specification, and greatly as a result of increasing attention to the aircraft in part of an operating system designed to do a certain job.

On the subject of initial choice, many a project has been doomed from the start because it was ill-conceived. And, presumably, some well-known ones have failed because they were improperly executed. That there is the twin criteria of a well-designed aircraft—stability and quality. One without the other is undesirable, but certainly both are necessary for success.

Stability comes first in a fundamental way. No matter how high the quality, if the design is not suitable for its purpose it will fail. For example, an M.G. Midget is no doubt a highly admirable, but its stability is a home or poor.

NEXT: Details of design

High Speed Flight

Test Instrument

A new flight test instrument—the Anstel 35—measures pitch, yaw, roll pressure and static pressure up to a Mach number of 3 is being produced by G. M. Gannett & Co., Inc., 254 W. Colorado St., Pasadena 1, Calif.

The package, about 15 inches long in the larger of two models which we available, is basically a bullet-shaped body with a flat base. The base is to be bolted to a wind tunnel windmill. The fin and tail assembly can be easily removed to take into the relative wind.

Model 3510D measures pitch and yaw angles up to 30 deg. within an accuracy of 0.2 deg.

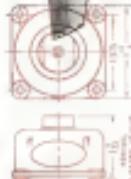
Model 3511D is like 3510D with the addition of a pitot tube mounted at the nose. Static pressure and static pressure are measured through the universal mounting with less than a 1% error to pressure pickup.

Both models have high natural frequency, both are suitable for modal test at the leading portion of a spike antenna, and both have 0-5 v dc potentiometric output.

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French Turbines Enter U.S. Field

Manufacturing rights to 9 small engines acquired by Continental; focuses commercial, military use.

The potential portion of small gas turbines in the U.S. aviation field has been given a sharp boost with the introduction of a group of nine new units designed for both commercial and military applications.

These are not experimental types, but already tested powerplants ready for production.

Manufacturing rights to the jet turbines have been acquired by Continental Motors Corp. from French Societe Turbomeca, which developed the units under sponsorship of the French Air Ministry (AVIATION WEEK Sept. 17, p. 18).

Continental, with its wide experience in the small engine field, should be able to push use of the newly acquired jet turbines into a broad field of application—both military and commercial.

Immediate prospect for the turbines initially favor the military—in guided missiles, capture target planes, utility aircraft and composite applications. But Continental sees their extensive

into the commercial market for increasing the utility of medium-size aircraft and specialized industrial equipment.

Continental expects these advantages for the new engines:

- Multiple uses as critical metals such as cobalt, nickel or tungsten.
- Likelihood of longer life than piston engines, when operated under proper conditions. This projected service span is based on exhaustive tests in France, Continental says.
- Small size in relation to power—a factor to consider in aircraft and ground installations involving portability and space limitations.
- High power to weight ratio.
- High degree of interchangeability for basic parts of various models, simplifying manufacturing and maintenance problems.

- Ducted Fan Design—One of the new engines—the Avon II—is a ducted fan configuration. Power from the turbine is absorbed by a row of blades (See



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UP THERE WITH THE BIG NAMES...CHAPTER NUMBER 7



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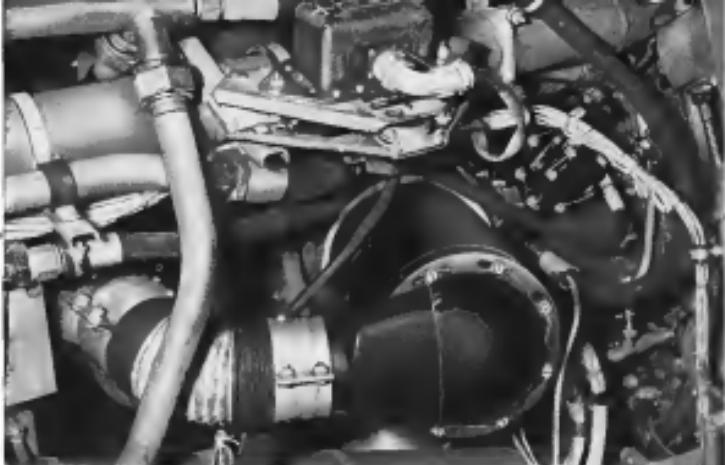
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IN THE NEWS

NEW GENERATOR MOUNT SAVES TIME AND MONEY

The only job is a mechanic's nightmare when it comes to removing a generator for routine maintenance. General Electric's new QAD (quick attach-detach) generator mount eliminates the need for removal of parts in mechanics' alcoves. Generator replacement time is cut from hours to minutes. The QAD has been adjusted as an industry standard—for hard-to-get-to installations—by a joint Air Force-Navy committee. It is interchangeable with present generation of equivalent rating.



Simple as one, two, three! 1. Fit generator into slots of mounting ring (permanently mounted on your engine), 2. snap by a slight twist, 3. adjust and tighten clamp ring. The QAD mount can be supplied to fit any GE aircraft generator. Simple, inexpensive, light weight, the new mounting can be used to mount a generator on piston engines or a stirrer generator on jet engines.



One man can replace a generator where two were required before, in a fraction of the time. No special tools required . . . no blind fastening. And, the time and money saving device may be added to your fleet gradually—as stage comes in for overhaul. For further information, call your General Electric aviation specialist or write, General Electric Company, Schenectady 5, New York.

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located in a circumferential duct extending from the air intake to the rear of the engine. The air is moved by the fan in pusher fit to a ducting opening. Thus, the engine is in a torquebox arrangement with a supplemental jet at each propeller blades.

Characteristics of the engine are between those of a ramjetprop and turbojet. For a given fuel flow, thrust is substantially higher under static conditions than a ramjet, but lower than a turbojet. At high flight speeds the torque is increased, the ducted fan developing more thrust than the ramjetprop, but somewhat less than the propjet.

The British and the Germans did early work on the ducted fan design. Theory of the configuration previously was provided in *Aerospace Wkly* (July 11, 1959, p. 25).

Continental says that when certified in a fighter aircraft with other characteristics about the same as present aircrafts of that type, the ducted fan engine will make possible a cruising speed of about 100 mph in comparison with about 170 mph at present. Obviously, the aircraft would have to be designed to take that higher speed.

At a flight of 100 mph, the engine's thrust is 200 lb.

► **Others**—Assessing the value of the engine, the Americans, I, offering 240 hp and weighing 135 lb, about half as much as a piston engine of comparable output, Continental says.

Offered in the series are the Puma with a thrust of 150 lb, and the Marlin II, pushing out 180 lb. Fuel consumption and weight of these units is reported by Continental to be "comparable to those of the very largest turboprop turbines."

These two units are shown especially for aircraft in the 400-500 cfm class, such as transport airplanes. And they would also be applicable in booster units for moving off tailhook and climb for bombers and transports where engine load is required with reduced front longitudinal loads, reports Continental.

The Puma turbine is a two-shaft unit, functioning as an air compressor, putting out 73 lb of air at 50 psi. It can be used for starting large units, for jet-type cockpit rotor drives, and for pitch control systems, as well as for operation of air power tools.

► **Research**—In addition to these units, dozens of the ducted, though not reported by Continental, are believed to be in the Anger II, another ducted fan with takeoff rating of 400 lb thrust and a weight of about 270 lb. The Autocar II, a shaft turbine of 460 hp, weighing 350 lb, the Peacock jet, with 262 lb thrust and a weight of 118 lb, and the Prowler, another air generator putting out 13 lb of air/sec at 50 psi.

Initial production of the Turbomeca engine will be handled by the Continental subsidiary—Continental Aviation

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- ★ AN APPROVAL ON AN DASH NUMBERS: VALVATRONIC FOR AN-6209, AN-6217, AN-6277 AND AN-6278
- ★ ALL AN ENVELOPE AND SIZES—4, 5, 6, 8, 10
- ★ MEET OR SURPASS ALL REQUIREMENTS OF SPECIFICATION AN-H-36
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JOHNSVILLE, PA.
takes its
ENVIRONMENTAL TEST PROBLEMS
to **Tenney**



Maximum availability, efficiency, dependability—these are essentials of test-chamber design for military research use. And those are the qualities engineered into the Tenney Test Chamber recently installed at the U. S. Naval Air Development Center, Johnsville, Pa., for environmental testing of aircraft components.

Specifications: Altitude to 60,000 feet; humidity, 10% to 95%; temperature, -100° F. to +200° F.; any temperature-altitude conditions simultaneously; automatic program cycling control with minimum clamped time for obtaining all extreme conditions.

For all types of testing—development, research, specification, and production—Tenney-engineered chamber will meet your requirements. For testing under all degrees of humidity, at all altitudes and temperatures, a Tenney-built test chamber ensures complete dependability and precisely controlled test data. Automatic cycling, indicating, and recording systems to your specifications, if desired.

For further information without obligation, write Tenney Engineering, Inc., Dept. G, 38 Avenue B, Newark 5, New Jersey.

Test Chamber Design for Every Industrial Use

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Manufacturers of Automatic Temperature, Humidity, and Pressure Control Equipment

and Engineering Corp., which is co-president of its organization.

Meanwhile, the arrangement with Turbomeca calls for continuing cooperation in future development work.

Another Turbomeca gas turbine—a 140-hp unit—will also be developed for manufacturing in the country. The engine, the Ondax—will be built by French Engine and Aviation Corp.'s Sudavia division, under licensing agreement with the French company (AVIATION WEEK, Aug. 22, p. 51).

Subcontracts Build

Cessna's Backlog

While Cessna Aircraft Co. has orders for more than 2,000 of its A-37 Bridging Army liaison planes, its other military subcontractor, Lockheed, represents a larger part of the current backlog of \$50 million, the Wichita manufacturer announced last week.

Other orders include some 516 mil lbs from Lockheed for assemblies of aft fuselage and tails of Lockheed P-94 interceptors and T-33 jet trainers at Cessna's Prospect plant; an unclassified industrial order for tooling necessary for the major Boeing B-47B bombers, to be delivered within the airport from Cessna to the Boeing Wichita plant; and major contracts for the new Republic F-105B supersonic jet fighter which General Motors Corp. will build at Kansas City. These components will be built at Cessna's enlarged Blanchester, Kansas, plant.

Meanwhile Cessna continues to make environmental first place. Model 170 air planes at the rate of two a day, while the majority of its larger Model 195 series production is now going to the Army with the designation LC-138C. Yet another source of business is in Cessna's production of hydraulic equipment for firm subcontract companies.

Another part of a \$10 million credit agreement of \$18 million has recently been completed to cover expansion in facilities facilities in an overall addition of 47% space floor space and flat working capital.

NAA Subcontracts

Some 4,600 outside firms collect up presently 30% of every contract dollar given North American Aviation, Inc., by way of subcontracting and furnishing goods, supplies and services.

With a backlog over \$510 million in military aircraft, NAA estimates that approximately 150,000 men and women in the Los Angeles area vastly benefit through 90 outside firms. NAA itself employs 26,100 people in its Los Angeles area plants, 7,500 at its Columbus, Ohio division, and is preparing to open new facilities at Folsom, Calif.

Deep-Drawn in 2 DRAWS

with

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TOOLING**



Bomber Bomb part drawn with
Advance Dies from 21 1/2" steel block.

THIS DIFFICULT STAMPING SIMPLIFIED BY NEW **ADVANCE** TOOLING METHOD



Write for
Illustrated
Descriptive
Bulletin

Here's another example of **ADVANCE** tooling ingenuity. The problem: this depth bomb will place deep-drawn in the dimensions shown above . . . in just two draws . . . from a 14-grain steel block. Similar pieces were formerly produced with five or six draws, or by half-working two holes.

Advance tooling techniques meet the requirements—with dies that produce the part in two draws as specified. Advance can help you with your difficult drawing and stamping problems . . . and save you time and money in your processing operations. Our engineers and our completely equipped die plant are ready to serve you. Consult us—or write for complete information.

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AF's B-52 missile, a pound on truck launching radio. Weapon is about 10 ft. long, has flat swept wing. Power is supplied by Allison jet, hot overall probe by RATO tank (power) in ...



Firing the AF's First Missile In Service Use

Story on Air Force Missile Test Center begins on page 43.



MISSILE BLASTS

off at peak of angle controlled by hydrazine adiabatic ramjet missile, for flight. In initial speed range ...



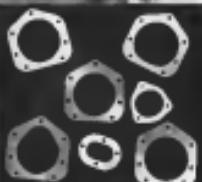
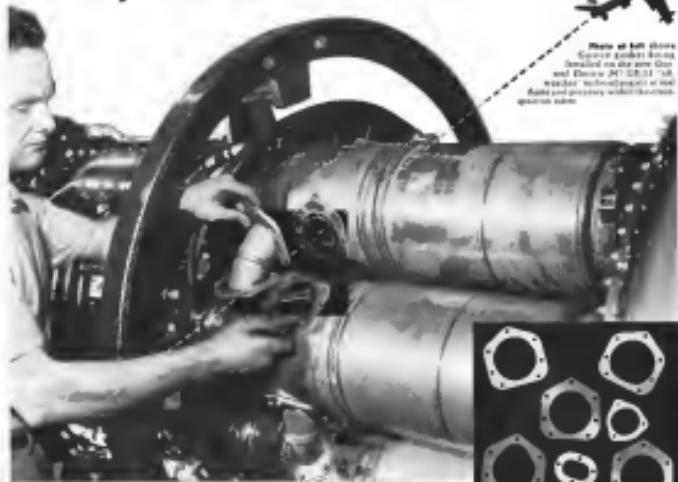
ROCKET CONTINUES

peak and impact is still impossible (arrow indicates its an impact). Power expended ...



every, with burning down (arrow) beginning to close and impact taking over

On tough sealing jobs like this...



J-M Goetze Gaskets can be mounted in any shape for sealing even complex tube connections. A few examples are shown here.

J-M Goetze Gaskets guard against critical flame and pressure leakage

Keeping flame and pressure from leaking where cross-section tubes connect can be as easy as the new J-M GT 25 "all weather" without engine is a typical example of the difficult and critical sealing problems that are solved with Goetze custom critical sealing gaskets.

The particular Goetze gasket used for this job is a multi-packeted viton gasket, permanent-state in flight and any temperature in service. It withstands temperatures to 180°F and 100 operating pressures commonly encountered in this type of service, its flexibility prevents against vibration, expansion and contraction.

Like all Goetze gaskets, this gasket has been in use for more than 6 years of Goetze "know-how" that has solved many of industry's most complex sealing problems with gaskets of every design, shape, and size. And it is made in the same modern machinery that makes Goetze gaskets to fill every order with remarkable promptness.

For further information about Johns-Manville Goetze gaskets — and other J-M products for the missile industry — write for Bulletin AV-16, Address Johns-Manville, Box 290, New York 16, New York. In Canada, write 939 Bay Street, Toronto 1, Ontario.



For maximum sealing strength J-M Goetze Gaskets provide the resistance required in severe service where usually encountered.

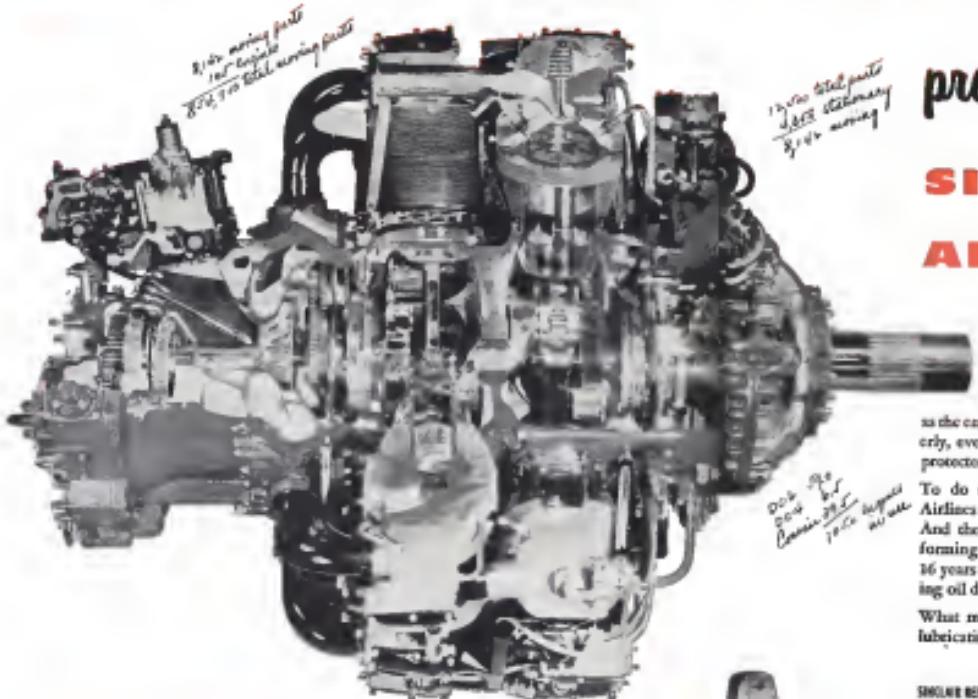


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point for large and
small airports.



SOUTHEAST ACROSS THE ATLANTIC, route out from Florida, depicted from



CONCRETE BLOCKHOUSE housing automation and men who need results.

Where Services Test Missiles

Building of range to fire new weapons is farther along than the development of the missiles to use it.

Three years ago, the Joint Long Range Proving Ground was established at Kwajalein Atoll, Mic. By the first time next year, the range should be complete out to its current 1,000 mi limit. That is the range needed to be getting a missile able to use the range of 300.

One year ago, a group of designers, engineers, technicians, military and civilian watched the first missile being fired. It was a test of an Army Guidance-Cell-Douglas Bumper jet.

► **Current Status—Recently, Avrocar Wizex sent a correspondent to the proving ground—secretly unguarded**

at the Air Force Missile Test Center to re-examine the current status of the range. His report sounded somewhat like the words of the hypothetical engineer with the hypothetical 1,000,000 hp engine. "Now that we've got it, what are we going to do with it?"

The firing now being made by Glass L. Martin Co. with the Martin Matador engine only a small portion of the range's capabilities. And flying, within a mile or two, is estimated at aircraft missile, hardly the type to repeat more than small distances.

Apparently this is one of the few areas in aerospace history when test



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Now in casting, riveting, and right-angle bases—for regular or counter-sunk rivets, for welding—permanently anchored or with a lock-nut. For anchor applications where float is desired—specify Plate-lok.



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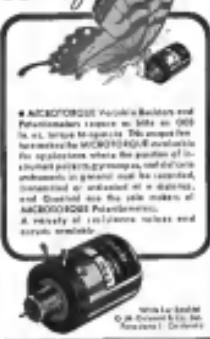


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dissemination as only. They are absolute-
ly free of charge, and by popular demand a
professional interest in them. Write to
Director of Research Information, NACA,
1524 F St., N.W., Washington 25, D.C.)

► **Turbulence-Intensity Measurements**
in a Jet of Air Issuing From a Long
Tube (TM 2141)—by Barney H. Little,
 Jr. and Stanford W. Walker.

The purpose of this report is to obtain quantitative turbulence data in
order to correlate flow-propagation velocities with local turbulence intensity.
Data are presented for a subsonic jet with fully developed turbulence
flow issuing from a pipe. By measuring this pipe concentrically with a large
pipe, and by maintaining a constant
velocity at the upstream station equal
to the mean velocity in the inner pipe,
boundary conditions were determined.

Four conclusions were drawn from
this investigation:

• Turbulence in the jet was not isotropic.
• There was an systematic variation
with Reynolds number for the ratio of the
log of the longitudinal turbulence velocity to
local mean velocity at pipe exit.
• There was no consistent variation in
the ratio of radial turbulence velocity
to local mean velocity with Reynolds
number at any station.
• Near the pipe center line, both longitudinal
and radial turbulence intensity
was constant from the pipe exit to
a distance 5 diameters from the exit.

► **General Plastic Behavior and Approximate
Stress of Ringing Disc in
Steel-Blonding Range** (TM 2147)—
by M. H. Lee Wu.

Basic of this report is the necessity
of calculating the distribution of
stress and strain in a rotating or con-
tinuous ring. The particular method
presented here differs from earlier ap-
proaches to the problem in that the
additional complication of body forces
is considered. A partly bounded anal-
ysis is obtained, based on the defor-
mation theory of elasticity and considering
finite strains. For a given mass and
a given moment of inertia, the stress
and strain of the problem can be obtained
by simple multiplication using the
titanium as a trial solution.

An approximate method is also given
for calculating strains by using strains
obtained from the steady state
strain and the tensile transverse shear
curve of the material. Numerical ex-
amples are calculated by two methods
and agree very well with the exact solu-
tion based on deformation theory.

USAF CONTRACTS

Following is a list of recent USAF
contracts announced by Air Material
Command:

Generalized Velocity Measure Corp., Ft.
Worth, Texas, development of precision mea-
surement for Doppler flow tubes, 600-0001,
monolithic wave converter, 600-0002,
Doppler flow tubes, 600-0003. Testing of
100 AF military personnel in aircraft and
engine maintenance, 600-0004. Testing
and evaluation of the S-100, Los Angeles,
Calif., facilities for production of C-12 aircraft
parts, 600-0005. Parts for the C-12 aircraft
and C-130, 600-0006.

Boeing Aerospace Co., Seattle, Wash., infor-
mal invitation for the restoration of more
than 100 aircraft.

Boeing Aerospace Co., Seattle, Wash., 600-0007. Three 2-ft. clear, rotating
aircraft seats, 600-0008. Two 2-ft. clear, 600-0009.

Universal Aerospace Corp., Philadelphia, Penna., 600-0010. Development of a
method of identification of C-12 aircraft
parts, 600-0011. Development of a
method of identification of C-12 aircraft
parts, 600-0012.

Universal Aerospace Corp., New York, 600-0013. Develop-
ment of methods for inspection of C-12 aircraft
parts, 600-0014.

Universal Aerospace Corp., Philadelphia,
600-0015. Development of methods for
identification of C-12 aircraft parts, 600-0016.

Universal Aerospace Corp., Philadelphia,
600-0017. Development of methods for
identification of C-12 aircraft parts, 600-0018.

Universal Aerospace Corp., Philadelphia,
600-0019. Development of methods for
identification of C-12 aircraft parts, 600-0020.

Universal Aerospace Corp., Philadelphia,
600-0021. Development of methods for
identification of C-12 aircraft parts, 600-0022.

Universal Aerospace Corp., Philadelphia,
600-0023. Development of methods for
identification of C-12 aircraft parts, 600-0024.

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Universal Aerospace Corp., Philadelphia,
600-0045. Development of methods for
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Universal Aerospace Corp., Philadelphia,
600-0059. Development of methods for
identification of C-12 aircraft parts, 600-0060.

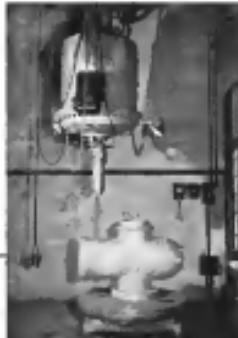
Universal Aerospace Corp., Philadelphia,
600-0061. Development of methods for
identification of C-12 aircraft parts, 600-0062.

Universal Aerospace Corp., Philadelphia,
600-0063. Development of methods for
identification of C-12 aircraft parts, 600-0064.

Universal Aerospace Corp., Philadelphia,
600-0065. Development of methods for
identification of C-12 aircraft parts, 600-0066.

Universal Aerospace Corp., Philadelphia,
600-0067. Development of methods for
identification of C-12 aircraft parts, 600-0068.

Universal Aerospace Corp., Philadelphia,
600-0069. Development of methods for
identification of C-12 aircraft parts, 600-0070.



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Shop process . . . typical examples of
Lebanon casting that will stand up to any
rigorous test.

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EQUIPMENT

New Anti-Fouling Sparkplug

Boeing claims "first significant change in 30 years" meets all aircraft piston engine needs today.

A major advance in sparkplug design, permitting to overcome most short-circuiting and greatly increase life and dependability of these parts, is seen in a new "anti-fouling" plug developed by a firm not even in the business.

The lesson, if the plug proves out competitively, goes to Boeing Airplane Co. and one of its service engineers, Gilbert F. Wright, who developed the basic design as a sideline. Boeing took on further development but says and believes the result represents the "first significant sparkplug design change in 30 years." The competing plant to turn the new design over to a sparkplugs manufacturer for production and probably is standing out leading firm in this field.

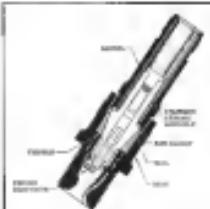
► **Lighthouses.** The Payoff from a manufacturing and procurement standpoint is that a single model of the plug meets all aircraft piston engine needs. Boeing claims eliminating several different models now needed. That shows it can be used in lightplane engines as well as those pressurized military planes. Reason is that the plug has a much wider heat range than present types and performs satisfactorily both in "hot" and "cold" running regimes, the company explains.

Essentially the new part is designed to give better protection to electrodes from wear and tear in the cylinder, prevent carbon buildup, assure more precise control of heat on control electrodes and raise combustion efficiency.

Electrodes in the plug don't project deeply into the cylinder, as in other types tested, they are recessed within the plug's structure in a "pivotalized" arrangement. The cylinder, a certain shape after opening into the cylinder and shield the project and other critical elements from the merger of heat, erosion and fouling. Configuration of the chamber is such that it produces a jet-like flow that erupts out from the plug with the explosion well developed by the time it reaches the cylinder.

The plug aims to produce more complete and uniform burning of the fuel, says Boeing, and to "pay off" the plug chamber of carbon.

► **Longer Lives.** Certain design wrinkles, existing around the electrode baffle, permit the plug to dissipate heat more



rapidly than other types, say the developers. Thin and the features already mentioned overcome a common reason to prevent plugs. To prevent fouling, they may be hot, but Boeing feels they should be cooler operating. By the combination of features in the new plug, both oxidizing zone activates and maintains to breakdown an iron oxidized, service tests are done.

Stated long life and anti-fouling advantages, these factors give the plug

a higher pre-ignition rating, result in improved starting, smoother and closer idling, and another, more rapid settling with an increase in fuel combustion, says Boeing.

Boeing points out the idea of recessing points in the plug has been tried before, but designers always "... tried to sacrifice power and performance because of the lack of proper design selection steps." The firm says it has succeeded in retaining high performance while giving better protection to the plug "... by controlling heat dissipation and the point of ignition for maximum efficiency."

► **Performance.** Some test results. In a total of more than 60,000 hr of use, tests in various engines and old and new with engine operating conditions, rated plug lasted an 119 to 170 hr, while there were no signs of fouling after 4,000 hr with the new plug. Other tests indicate the plug was 20 deg cooler under normal conditions and reduces exhaust gas temperatures by as much as 25 deg. In service tests on a Pratt & Whitney R-1830 engine under extreme fouling conditions (fuel contained less than the normal amount of lead), the Boeing plug consistently operated for 70 hr while the heat plug on the control field within 22 hr. Other tests showed the new plug adaptable to maximum power conditions in the PW 3500-16p. Wasp Major and to small engines in light planes. The new plug can go two octane numbers lower than other plugs and still retain the same knock-rating as the others, both of Standard Oil Co.'s laboratory in Richmond, Calif., have as

Why American Likes Its DC-6s

Recent \$35-million order was based on AA's experience: high speed, heavy loads, few maintenance problems.

The shaking down stage, the craft have gone into service smoothly, according to W. E. Spivack, assistant manager of aircraft sales tall in American Airlines at the time Douglas DC-6s were

delivered. Present, on the company's transatlantic flight as an average daily utilization of 9 hr, 49 min, was the reason Americans morally decided to spend some \$35 million for 24 more DC-6s and six DC-5A freighters which it will begin to put into service in 1953. Our spokesman for the survey said: "No other plane was even considered."

There are now 11 DC-6s of AA's original order in service, with six more in process of delivery, and they have successfully piled up over 12,000 hr of flight time. Although still considered in



More motor per pound

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Now you can have a lightweight, continuous-duty, explosion-proof motor. This new construction in integral horsepower ratings represents another Westinghouse first in the Aviation Industry.

This revolutionary dc motor is completely self-contained. No gears or other external mechanical equipment is required. Special flame arrestor design provides complete protection and permits continuous-duty operation . . . with only a slight increase in weight over corresponding open, self-ventilated motors.

These direct drive motors cover a range from 1 to 6 horsepower and weigh from 20 to 28

pounds. They are available with standard AND mounting pads or with special mountings. Extra noise filters are available. This new design has been explosion-proof tested according to USAF specifications.

Look into this new motor. Call your nearest Westinghouse Office or write Westinghouse Electric Corporation, Aircraft Department, Lima, Ohio.

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lounge's use to those passengers playing and did not give more people a chance to change their seats.

Headrests have been removed from the air conditioning system since they have been claimed unnecessary.

AA is considering installation of the new Douglas high capacity cabin recuperators which will be available within a year, according to Spreen. These blowers will increase air output from 1,100 cu. ft. a minute to 1,700. The B's present cabin superheating system uses Skydrol, which AA says has the inherent qualities of fire retardant qualities and insulating ability making for longer heating times like.

► **Passenger and Cabin-temperature improvements have been made at the week under largest to eliminate freezing difficulties. These include extensive use of rubber hose, routing of hoses through the fuselage interior, electrical blanket heating at the water outlet. Also, water tanks have better valving and are made of heavier material to prevent collapse.**

An increase in service life of toilet facility components is forecast through use of heavier, sturdier units and fixtures. Illuminated signs outside each seat now indicate whether they are occupied or vacant and identifying ribbons on each door have learned conclusion.

Ar-Tex is used for the cabin retrim instead of graham, resulting in easier cleaning and longer service.

► **Seating.** American—American's DC-6 accommodates 32 passengers and has a cargo容積 capacity of 1,000 cu. ft. It is not planned to convert that space for making passengers.

► **Capacity Growing.** Some idea of how American is expanding its seating and cargo capacity may be appreciated in comparing present and future capacities. With the 11 DC-6s the carrier is now operating total seat capacity for its entire fleet comes to 6,352 and cargo capacity to 93,000 lbs. When the carrier has its entire DC-6 fleet in operation, sometime in 1951, seating will jump to 7,512, if no further equipment is purchased.

This figure, however, may be altered in other ways. For instance, if AA should convert its fleet to the new heavy-duty air crews, 800 more. It may buy four 70-passenger DC-6s flying and if it is converted it would like to convert four more as soon as the planes can be speeded from their current route.

AA's cargo capacity now runs to some 477,000 lbs—the six DC-6s total, the 24 in order, plus the six DC-6s on order, could near that number 482,000 lbs.

Landing weight on the DC-6 is 65,000 lbs, an increase of 10,000 lbs over the DC-5. Takeoff weight increased from 91,000 lbs to 100,000 lbs.

Relocation of the P&W R-2800

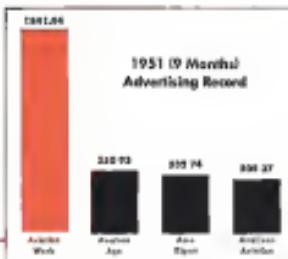
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caught fire while the plane was making a final approach under control of the autopilot system's computer. Even with the loss of one engine, the "instructor" took over and made a "perfect landing," according to Ed Chodik, Lear pilot at the controls. He added that that, as having his "hands and good fire to fight the fire" was instrumental in getting the aircraft down without injury to the passengers and little damage to the plane.



Blower Clutch Selector Valve

A new, electrically operated, blower clutch selector valve [above] for 2-stage engine intercooler control has been put on the market by Avid Division, General Metals Corp.

Manufactured out of the 2-position unit that mechanical linkages and all payments are eliminated, high blower position is actuated by magnet coil pressure, while spring-loaded valve is held in low blower position, valve is light, new construction and inexpensive.

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Sleeperette Seat

Aeroflex now offers a unique info production.

The one, developed jointly by Aeroflex and Pan American World Airways, is, according to the source, the first to be designed as a dispensable seat from the ground up, then adapted to regular seat position, rather than the reverse.

PAA engineers and that Aeroflex design, developed, tested and developed a prototype and an airplane seat.

The seat offers simplicity to PAA, comfort, survivability, light weight and good appearance.

The seat has a reclining center arm seat. This permits a passenger to seat himself of both seats when possible without having to disgorge of a removable arm rest.

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Called the Model 445-2, the seat is



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equipped with a two-position fast seat, a two-position leg rest and a footrest table.

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Four soldiers in seat all around and passengers have been made to assume the seats in the truck. Passengers are to be given the opportunity to move from one seating arrangement to another. Seat is strong to 10Gs.

Reflector Paint Speeds Output

White paint applied to the plant floor at service stations, hospitals, the B-52 bomb bay being modified at Lockheed Aircraft's Marietta, Ga., plant, reflects four times as much overhead lighting as before and has made need for six high intensity lights on each antenna.

The paint is Speed-Brite, containing a rust inhibitor, Dycem, having properties of fast drying, good adhesion, and resistance to many solvents and alkali use. A band was applied over the point to protect the white surface and make cleaning easier.

Previously considerable difficulty was experienced in rigging the extension lights and it required a good deal of the worker's time. Now the plant's constant fluorescent lighting does a double-duty job.

Spark Advance Gives PAA Fuel Savings

Spark advance on the American World Aircraft Pratt & Whitney R-4360 engine (based on the Boeing Strombium) is saving the airlines money, its engineers told Aviation Week.

The spark advance, used during cruise, went from 20 deg before top dead center to 35 deg, then to 35 deg. At the 25-deg setting, PAA estimates that maximum fuel consumption economies can reach 15%. This amounts to about a 1,316-lb weight saving on an Atlantic crossing.

Conveying advantages of the system are reduction of engine temperature by as much as 14°C and the tremendous reduction in the bearing's bearing effect on the turbines/gearbox.

At one point the valves hardly get 400 hr out of the seat. They are now up to a 300 hr overhauled period.



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NEW AVIATION PRODUCTS



New-Tread Tire

Extensive tests of the Thompson "Extra-Landing Tread," an aircraft tire featuring a new tread design, suggest it gives longer life, says the company. Several aircraft airlines use DC-3, DC-4 and Douglas aircraft, according to Thompson Aircraft Tire Company.

The tread consists of a series of ragged slots, spaced to carry heavy loads and provide greater displacement of the tread-blocks when the tire deflects at ground contact.

According to Thompson engineers, the new tread design is the result of greater cushioning provided by several bands of structural load and cushion previously responsible for the "blowing" of the center ribs that has occurred with some tires—the result of poor adhesion of the original tread design to ground.

The tread slots are tapered in depth to reduce rolling resistance and other effects. The new tire is flexible and strong like straight-tread types and does not lose its resistance to side slip when cornering and steering on wet surfaces and ramps, the firm says.

Thompson Aircraft Tire Co., 18th and Monroe Sts., San Francisco.



Overhears VHF Talk

A VHF receiver, resembling not much a conventional home radio set, which can be used to monitor aircraft

communications on the 108 MHz and band, has been placed on the market by Radio Apparatus Corp.

The set, Model ARI, can be connected to an a.c. or d.c. power source. It contains all lower instructions to assemble and upgrade circuit to be used by anyone concerned with takeoff and landing safety of private, commercial or military planes, says the maker. The unit is finished in a black, plastic cabinet, measures 10x18x10 and weighs 75 lb.

Radio Apparatus Corp., 100 First St., Sq. Bldg., Indianapolis.

Plane Cover Fabric

Production of Arma 25, a tough, plastic-coated fabric developed especially for use on aircraft, has been announced by Flexite Products.

The product, developed by a New Jersey company, can be used as external covering for wings, nose, fuselage and other surfaces, says Flexite. It is suitable for many planes of aircraft construction, the company adds. Length 25 ft and 10 ft wide, has a tensile load strength and can withstand temperatures from -60 to 300 F.

Flexite Products, El Monte, Calif.



40G Seat Fitting

A new attachment fitting for use on seats and seats in aircraft, capable of handling loads up to 40 G and with easy locking and unlocking features, has been placed on the aviation component market by General Brown & Astor.

The fitting is a strong, compact assembly of pins situated in a cavity, designed to secure seats to the aircraft by connecting to a holding fixture, said an X-15 spokesman. The fitting pins are practically locked in an attached position by closing the collar up or down and in the latter placement an amount of the seat, the pins stay open as long as the collar remains in the attached

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FINANCIAL

Why the Merger Hearing?

• CAB long has wanted to spur "desirable" combines, but the hitch is that it has no power to force any line to merge against its will.

• So it opens the Delta/Northeast case to all comers, hoping one will come up with a practical proposal. Odds are the proceeding will be long-and fruitless.

An ambitious attempt to speak "desirable" combine constitutions is in the making as the Civil Aeronautics Board proceeding entitled the "New England-Southern States Merger Investigation." This hearing presented an opportunity to establish an all-out case that will cover services serving the Far Coast. (It will) permit at least nine truck airways and all six local airways lines to get into the set.

In a broad sense, this current proceeding paves the way for the merger proposed back more than a year ago by Delta and Northeast. As these two carriers do not connect, their proposal has been viewed as a subterfuge to gain additional mileage and a long sought entry by Delta into New York. It appears that the CAB did not view this proposal very seriously but used it as a vehicle to broaden an investigation of the trans-pacific network among the East Coast.

It is important to note that this case proceeding is perhaps more than an investigation. The Board simply does not have the power to implement its merger. This has been recognized and admitted by CAB itself.

The Board can, however, through various means, prod industry to consolidate. Counted over the award of and compensation is a powerful weapon in this respect but the Board has been most reluctant to apply it in this case. Forbore, the theory of dampening rate changes can also be applied in a lever but has not been so utilized.

• **Merger Holes.** The Board is also investigating the possibility of a merger or consolidation of National with Colonial and/or Northeast. Also being reviewed is the combining of Delta with portions of the assets of Capital and Northeast and/or Colonial in such fashion as to permit single carrier service from Delta's system to New England.

It becomes apparent that Eastern and Americans would be most directly concerned with any or all of the above possibilities and may be exposed to

expense thus views on the subject.

To make the investigation more interesting, it has been reported that a group has been approaching the New England Cities, comprising the Capital, Boston, Nos. 35 and 31 in the case of a new north-south truck carrier by providing a major link from Atlanta to New York, but of little consequence to a new transcontinental path. This, in turn, could cause United and TWA to make separations.

Obviously any proposed consolidating at the main pattern along the East Coast is going to affect all of the local service lines in the area. This will naturally affect All-American, Lake Central, Piedmont, Robinson, Southern, and Wigwam proceeding participants.

• **Everybody in the Act-G!** Of course, the various communities served may be expected to have definite views as to how any changed or senior pattern may affect their facilities. In addition to the scattered clusters of consumers, one cannot overlook the broad area affected by such consolidations.

With this background of developed and conflicting interests it is all-inclusive that we merger or consolidations will have a far-reaching effect to prevent even under the most favorable circumstances.

As repeatedly emphasized as this space, the strongest sounding argument in favor of merger is not conducive to voluntary merger. The free play of economic forces is not permitted to operate in the regulated air-transport industry. This circumstance creates a compelling force or a real incentive to desirable consolidations.

Regulation can always be taken as the provision of the Civil Aeronautics Act of 1938 which entitles a permanently established carrier to sufficient mail, cargo, stipulated conditions, to make profit, present and future operations viable.

Moreover, the economic climate at present does not lead us to imagine that all carriers enjoying peak earnings, the natural tendency is to perceive the

best quo of the individual lines by their separate managements. When used as the basis for compensation, the expense of the individual carrier could lead to a more receptive response.

At first glance, it may appear that a Northern Colonial combine case has scope to merge. Certainly with a changed assignment at Colonial, a desire for consolidation may rest on desirable circumstances. However, even in the seemingly relatively simple case, there are many complications.

Assuming management at Colonial consents to a deal, stockholders approved will then be required. Will stockholders who paid \$1 per share and higher approve an arrangement which may have an immediate exchange equivalent of around \$5 or \$6 per share? Most likely not. Colonial's book value is less than \$1 per share, and CAB, by prior decision, is unlikely to accept a price by purchase or exchange which is in excess of book value. Without stockholders' approval no merger or consolidation can proceed.

Indeed enough, CAB appears to nominate the biggest obstacle to any merger or consolidation.

Broad approval is required of any consolidation merger, line, operating one road or acquisition of control of one certified carrier. The Board must feel that such proposed arrangement is in the public interest before it can become effective. The law directs the Board not to approve any arrangement which would "result in creation of monopoly or jeopardize another air carrier not a party to the agreement."

• **Don't Hurt Anyone.** It is this threat of imposing the interests of "another air carrier" which can prove troublesome.

For this reason, while the Board is quite concerned with strengthening the industry, another, it may be circumvented by the law in implementing its objectives. The following statement attempts to show the repeated difficulties of effecting consolidations. (Aviation Week, July 25, 1951, p. 14)

At the preceding conference held last month on the "New England-Southern States Merger Investigation," a wide majority of conflicting viewpoints were reported. At least one or more detailed pro-merger conference appear indicated even before an agenda for the "investigation" can be agreed upon.

Despite the great hope and desire for mergers and consolidations expressed by the CAB and the carriers, no quick accomplishment in this direction may be expected.

In fact, this proceeding may have set the longest case in CAB history. And when it is all over the likely next committee of the existing carriers will most likely remain virtually unchanged.

—Selig Atchley



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SHORTLINES

► **Air Lines** will stage lowest cross-channel fares of poster era starting Oct. 24, continuing company trend to "bring its services ultimately on much of the entire community," firm says.

► **Aero Club of Washington** elected its new president Edwin E. Shatley, Jr., chief of CAB public information, according Donald D. Webster.

► **Air Crash Transport Assn.** is changing its name—ACTA—"National Trade Association of Independent Air Crash Lines"; change is from "monolithic airline" to "independent air crash line."

► **Air Transport Assn.** metallurgical committee has elected J. A. Beeson its new chairman; he is manager of metallurgy for TWA.

► **Airbus Airlines** has CAB department order for temporary and rate base to \$1.23 a mile effective June 16, 1951, with \$3,216,000 back pay from T. 1947, to June 30, 1951.

► **All-American Airlines** has appointed

Paul West, Jr., as new public relations director, following switch by J. Robert Roskey from that position to pan FR staff of Fairchild Aircraft division. West comes from the Associated Press.

► **American Airlines** is reported converting six more DC-3s to high-density seating or coaches this fall.

► **British European Airways** is increasing most of its fares this week, with London-Frankfurt up 5% to 13 pounds, 6 shillings.

► **Civil Aviation Board** top staff man believe CAB will not defer further Economic Regulation 251 by needed legislation—will not set aside hearing date on flights—during the investigation of the mail-order problem. Part 251 will stand as it and each operator will be judged individually and warning followed by enforcement proceedings started if he appears to violate the regulation. Reports are that CAB is extending the accident investigation committee to its present committee until "such time" as the administration of the bill of rights is well enough to yield results.

► **Delta Airlines** will not defer further legislation to change or cockpit limit, operations, etc. CAB has extended deadline for answers to get identification ready to Dec. 15. This continued publication of its airport-to-airport mileage and airline route book to Air Traffic & Service Corp. of Washington, D. C.

► **Civil Aviation Administration** and ATA are urging Cuban Radio Co. and others to make earlier-than-scheduled delivery of communications to upgrade the old, dilapidated and inefficient on-airways range of stations. Recovery schedule of 100 stations in Cuba has been recognized as a safety hazard (Aviation Week Sept. 1, p. 65). CAB places formal investigation in chart, NAV, publications, and operations to actual date from mid-November July 1 next year. Installation of distance measuring equipment rules that fitting airplane. CAB program to combine traffic control tower and communications offices and personnel will apply only in non-congested areas. Idea is to minimize effect of ground controller down caused by entry into visibility zone.

► **Commerce Transportation Office**, Undersecretary Delta Rusk, wants enough time to determine what to do and expand its communications authority after its new communications legislation goes into an operating department, now the general maintenance plan is to make (NSRRA) program. Maj. Gen. Donald H. Clegg and some other Rusk's administration temporary assistants have returned to Rusk's duties

now than base planning meets with approval.

► **Defense Production Administration** expects to move a further moratorium on processing aeronautics automation applications. "At present," says Trans World Air and others, "existing flight data base on aircraft ordnance application... DPA expects some change in supply of sheeted steel and aluminum by late next year, which should end basically on bad, used, and export contracts. But copper shortage is not to be an permanent.

► **Economic Stabilization Agency** has appointed a Railroad and Airline Wage Board under Chairman Nelson Barna, former chief of industrial relations division of the Bureau of Labor Statistics. The board handles wage arbitration for rail and, replacing the temporary panel of William M. Lammert, that took care of 82 cases last summer.

► **Frontier Airlines** has CAB certificate renewed to Mar. 31, 1952.

► **Northwest Airlines** announces lease of 12 Martin 2-62 transports to Transocean Air Lines for domestic military charter operations. Transocean is increasing tonnage capacity from 36 to 48-44 Transocean charter bought three NWA 2-62s.

► **Pan American World Airways** still features a physical block against any link up of Pan American, Cuban Airways and National Airlines by exchange New York-Buenos Aires via Miami and Bahia. Pan Am issues the Bahia-Miami route to Pan American until it will refine the route by Pan American on any National interchange. Then, Pan Am holds one transpacific, anyway, to force the plan for Bahia-Pan American interchange on Pan American South America, Brazil National via Western—both covering all Pan American and Pan American.

► **Twa World Airlines** has CAB clearance order for international mail, pay mail, and in 27 months a non-mail effective July 1, 1952.

► **U. S. Airlines**, scheduled air freight carrier, has appointed Mel Adams and Associates of New York to direct its public relations.

► **Western Air Lines** has delayed a 25% reduction in maximum speeds allowed as of Nov. 1. "Forecast of potential earnings for balance of the year," plus 1951 record to date, maintained the payment, the directors say. This is Western's second 25% deferral this year.



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EDITORIAL

Security & Ultimate Confusion

For four years on this page AVIATION WEEK has been reporting and depicting the steady trend toward more and more secrecy of U. S. Government news. Always, the aim for censorship has been "national security."

All loyal Americans, including us, believe in helping maintain national security. But we have pointed out innumerable examples of unnecessary, expansionist, over-cautious withholding of facts from the American people. And we expect to continue doing so.

The most recent issue of press-censorship, counter-pancensorship, amplifications and interpretations on the subject of what the President thinks can be safely printed and what cannot involve any of the experience of Alice in Wonderland. But these wacky suppositions are another foamy way messages products of the keen, creative mind of a Carroll. These most recent ridiculous goings on were set in motion by the President of these United States.

No other incident or series of incidents mirror more amazingly the unbelievable confusion and indecisiveness at least one high place in Washington. So does it reflect the distorted attitude toward the press and the strange concept of public information.

The story begins with an executive order released by the President Sept. 24. In announcing it, Mr. Truman claimed the American people "have a fundamental right to information about their government, and there is no element of censorship, either direct or indirect, in this order."

But then he assured that the purpose of the order was to permit every agency in the Executive Branch to clamp security classifications on any material it considers which it deems to be "security information," manufacture disclosure of which "would or could harm, tend to injure, or otherwise threaten the security of the nation." He signed a memorandum not to classify data unless "necessary," but he left the way open for any call service ordering without previous experience in classification to slap a restriction on any paper whatsoever.

As the Washington Post said so well, the so-called security agencies—which firmly share classified material—“have shamed their classifications powers so wantonly—as, for instance, in the State Department’s putting a ‘restricted’ stamp on a catalogue of names and

hostile addresses of the delegates at the Japanese Peace Conference in San Francisco.” The Post said further that “the new security agencies . . . would be likely to abuse the power conferred on them by the President even more gravely.”

In a press conference later, the President defended his order in the usual manner and became so eloquently entrenched in the subject that at one time he was claiming that “aesthetic publications” should not even publish material that he was official government spokesman had released. It was not long after the conference that the President’s press secretary issued a statement to “clarify” Mr. Truman’s views on security information.

Mr. Short’s “clarification” quite seemed the trend and much of the rest of Mr. Truman’s stern lecture . . . and it supplied no safe of thumb whereby in every instance responsible and qualified officials can be distinguished from those who are not,” the New York Times decided, under the byline of its chief Washington correspondent, Arthur Koach.

“Mr. Truman’s tongue-tieing . . . is very difficult to explain or even understand,” Mr. Koach said. He referred to the President’s “new and bizarre concept of the duty of the press,” (that it was its own conscience and not act automatically upon approval of official government statements).

The only bright ray as optional can see now is the hope that finally the press and public have been alerted to positive and united action that will force this administration to back track from its indefensible executive order.

Freedom of information has been nibbled at since the Roosevelt era, but so haphazard and unpredictable that it has failed to avert more than sporadic ones from a relatively few wretched observers. This dramatic and almost unbearable bumbling of the President’s may be what we needed, after all, to make all demand more information from our government and get it.

On our part, AVIATION WEEK will be watching the civilian aviation agencies closely for any unusual excuse to withhold legitimate, non-secret information under the new executive order after it goes into effect late this month. We shall report to you such instances with names, places and dates.

—Robert H. Wood

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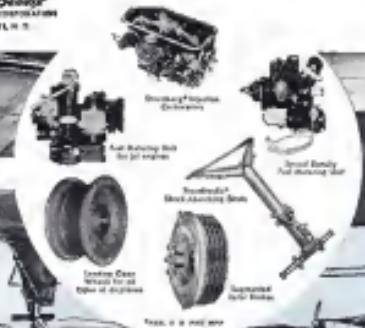
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